



a **NUCOR** company

SECTION 8 36 00

OVERHEAD DOORS

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**** NOTE TO SPECIFIER **** C.H.I. Overhead Doors; Overhead Doors.

This section is based on the products of C.H.I. Overhead Doors, which is located at: 1485 Sunrise Drive.

Arthur, IL 61911.

Tel: (800) 677-2650.

Fax: (800) 738-5006.

E-mail: aia@chiohd.com

Web: www.chiohd.com.

C.H.I. Overhead Doors, a NUCOR (NYSE: NUE) company, has been manufacturing overhead doors for over 40 years. Through our authorized dealer network across North America, you can access our entire product line including commercial and residential sectional doors, rolling service and fire doors or shutters, and high-performance doors. C.H.I. integrates premium-quality materials with superior designs, workmanship, and a strong focus on end user satisfaction. Dedicated to continuing the best customer service and dealer support in the industry, it is apparent why C.H.I. is referred to as "The Door to Quality". C.H.I. is headquartered in Arthur, IL with additional manufacturing in Terre Haute, IN. For more information visit chiohd.com.

PART 1 GENERAL

1.1 SECTION INCLUDES

**** NOTE TO SPECIFIER **** Delete items below not required for project.

A. COMMERCIAL INSULATED STEEL SANDWICH DOORS

1.2 RELATED SECTIONS

**** NOTE TO SPECIFIER **** Delete any sections below not relevant to this project; add others as required.

A. Section 05 10 00 - Structural Metal Framing.

B. Section 06 10 00 - Rough Carpentry.

C. Section 09 90 00 - Painting and Coating.

D. Section 26 05 00 - Common Work Results for Electrical.

1.3 REFERENCES

**** NOTE TO SPECIFIER **** Delete references from the list below that are not actually required by the text of the edited section.

- A. America National Standards Institute (ANSI) / Door & Access Systems Manufacturers Association, International (DASMA):
 - 1. DASMA Thermal Performance Verification Program
 - 2. ANSI/DASMA 105 - Test Method For Thermal Transmittance And Air Infiltration Of Garage Doors.
 - 3. ANSI/DASMA 108 – Determination of Structural Performance Under Uniform Static Air Pressure Difference
 - 4. ANSI/DASMA 115 – Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure
 - 5. ANSI/DASMA 163 - R-Value and U-Factor As Applied To A Residential or Commercial Garage Door.

- B. ASTM International (ASTM):
 - 1. ASTM A653/A653M - Standard Specification for Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM B209 - Standard Specification for Aluminum-Alloy Sheet and Plate.
 - 3. ASTM B221 - Standard Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes and Tubes.
 - 4. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 5. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
 - 6. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 7. ASTM E1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
 - 8. ASTM E1996 – Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

- C. American Architects Manufacturers Association (AAMA):
 - 1. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

- D. Consult factory for projects requiring Buy American requirements for American Recovery and Reinvestment Act, Build America Buy America Act or American Iron and Steel Certification

1.4 SYSTEM DESCRIPTION

**** NOTE TO SPECIFIER ** Include the following paragraph for exterior doors.**

- A. Design doors to withstand:

**** NOTE TO SPECIFIER ** Include the following paragraph for exterior doors.**

- 1. Positive and negative design wind loads in accordance with Building Code.
- 2. Positive and negative design wind loads of ___ PSF.
- 3. Windborne-Debris Impact Resistance: Provide impact -protective overhead coiling doors that pass ASTM E1886 missile -impact and cyclic -pressure tests according to ASTM E1996 for Wind Zone ___ for basic protection.

**** NOTE TO SPECIFIER ** In the following paragraph, 10,000 cycles is standard.**

- 4. Cycle life of 10,000 cycles.
- 5. Cycle life of 25,000 cycles.

6. Cycle life of 50,000 cycles.
7. Cycle life of 100,000 cycles.
8. Cycle life of __ cycles.

**** NOTE TO SPECIFIER **** In the following paragraph, select operation to suit project requirements.

- B. Operation: Electric.
- C. Operation: Manual.
- D. Operation: Chain hoist.

**** NOTE TO SPECIFIER **** In the following paragraph, select track type to suit project requirements.

- E. Track and Operating Hardware: Standard lift type.
- F. Track and Operating Hardware: Vertical lift type.
- G. Track and Operating Hardware: High lift type.
- H. Track and Operating Hardware: Follow Roof/Incline pitch type.
- I. Track and Operating Hardware: Low headroom type.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Shop Drawings: Indicate opening dimensions and required tolerances, jamb connection details, anchorage spacing, hardware locations, installation details, and special conditions.
- C. [Product Data]: Provide information on components, application, hardware and accessories.
- D. Closeout Submittals: Operation and maintenance data.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall provide an overhead door system capable of withstanding positive and negative wind loads as required by local building code for 10,000 cycles.
- B. Installer Qualifications: Installer shall be authorized and qualified to install overhead door systems on the type and scope of project specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of all materials in accordance with federal, state and local laws.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 WARRANTY

- A. Provide an original of the manufacturer's limited warranty against manufacturing defect and product workmanship.
 - 1. Steel Sections: 10 years from date of manufacture for steel door sections used in commercial applications, under normal conditions, against splitting, cracking, rusting through or delaminating.
 - 2. Hardware, including springs: 1 year from date of manufacture for defects in material or workmanship.
 - 3. Aluminum Sections: 10 years from date of manufacture for aluminum door sections in commercial applications against defects in material and workmanship.
 - 4. Aluminum Finishes: 3 years from date of manufacture for aluminum finishes against cracking, checking or peeling.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: C.H.I. Overhead Doors, which is located at: 1485 Sunrise Dr.; Arthur, IL 61911; Toll Free Tel: 800-677-2650; Fax: 217-543-4454; Email: request info (aia@chiohd.com); Web: <http://www.chiohd.com>

**** NOTE TO SPECIFIER ** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 COMMERCIAL INSULATED STEEL SANDWICH DOORS

- A. 2 Inch Polyurethane Thermally Broken Insulated Steel Sandwich Doors:

**** NOTE TO SPECIFIER ** Delete product options not required. Then delete finish options not required.**

- 1. Product: Model 3217. Thermally broken insulated steel sandwich door.
 - a. Appearance: Flush.
 - b. Exterior: 26-gauge, 0.017 inch (0.43 mm) polyester painted galvanized steel.
 - c. Interior: 27-gauge, 0.015 inch (0.38 mm) polyester painted galvanized steel.
 - d. Maximum Standard Door Size (WxH): 32 ft 2 inches (9.80 m) x 18 ft 0 inches (5.49 m). Door widths up to 40 ft 2 inches (12.24 m) or heights up to 32 ft 0 inches (9.75 m) possible, but not in combination. Must consult factory for larger sizes.
 - e. Finish: White.
 - f. Finish: Almond.
 - g. Finish: Sandstone.
 - h. Finish: Brown.
 - i. Finish: Gray.
 - j. Finish: Black.
 - k. Finish: Powder Coat RAL No. _____ available up to 20 ft 2 inches (6.15 m) wide.
 - l. Finish: Logo Doors. Full color digital imaging on the exterior or interior of the door. Consult factory for image requirements and pricing.
 - m. Plank Sections: 18 inches (457 mm), 21 inches (533 mm) and 24

inches (610 mm) based on overall door height.

**** NOTE TO SPECIFIER ** The additional product features apply to Models 3212, 3216, 3217.**

2. Additional Product Features:
 - a. Insulation: Thermally broken, foamed in place with CFC, HFC, HCFC and PFA free and non-VOC polyurethane insulation. Foam to have zero Ozone Depletion Potential (ODP) and zero Global Warming Potential (GWP).
 - b. U-factor: 0.19 per ANSI/DASMA 105.
 - c. Calculated R-Value: 15.61.
 - d. DASMA Thermal Performance Verified Product
 - e. Air Infiltration: 0.10 per ANSI/DASMA 105, ASTM E283.
 - f. IECC®, ASHRAE 90.1®, and California Title 24® compliant for thermal performance and air infiltration.
 - g. STC Rating: 21.
 - h. Thickness: 2 inches (51mm).
 - i. Joints: Tongue and Groove.

**** NOTE TO SPECIFIER ** Delete end stile option not required. 20 gauge is standard.**

- j. End Stile: 20-gauge, 0.034 inch (0.86 mm) galvanized steel, painted white.
- k. End Stile: 14-gauge, 0.070 inch (1.78 mm) galvanized steel, painted white.
- l. Backer Plate: 24-gauge, 0.022 inch (0.56 mm) galvanized steel.
- m. Pass door capable. Complete section 2.6.C if required.

**** NOTE TO SPECIFIER ** Delete window lites options not required.**

- n. Window Lites: 24 x 6 inches (610 x 152 mm). 1 inch (25 mm) plain DSB, insulated, matching frame.
- o. Window Lites: 24 x 6 inches (610 x 152 mm). 1 inch (25 mm) tinted, insulated, matching frame.
- p. Window Lites: 24 x 6 inches (610 x 152 mm). 1 inch (25 mm) tempered, insulated, matching frame.
- q. Window Lites: 24 x 12 inches (610 x 305 mm). 1 inch (25 mm) plain DSB, insulated, matching frame
- r. Window Lites: 24 x 12 inches (610 x 305 mm). 1 inch (25 mm) tinted, insulated, matching frame.
- s. Window Lites: 24 x 12 inches (610 x 305 mm). 1 inch (25 mm) tempered, insulated, matching frame.
- t. Window Lites: 34 x 16 inches (864 x 406 mm). 1 inch (25 mm) plain DSB, insulated, matching frame.
- u. Window Lites: 34 x 16 inches (864 x 406 mm). 1 inch (25 mm) tinted, insulated, matching frame.
- v. Window Lites: 34 x 16 inches (864 x 406 mm). 1 inch (25 mm) tempered, insulated, matching frame.
- w. Window Lites: 25 x 13 inches (635 x 330 mm). 1/2 inch (13 mm) polycarbonate, insulated, black oval frame.
- x. Window Lites: 3 inches (76 mm) Exhaust Port.
- y. Window Lites: 4 inches (102 mm) Exhaust Port.
- z. Full View Section(s): Aluminum frame to match width and section layout of steel sections. Only available up to 24 ft 2 inch (7.37 m) wide doors.
 - 1) Construction: 4 inch (102 mm) face end stiles standard up to 16 ft 2 inches (4.93 m). 8 inch (203 mm) face end stiles over 16 ft 3 inches (4.95 m). 2 inch (51 mm) face intermediate rails and 2 inch (51 mm) face center stiles. Assembled with through bolts for added strength and longevity.

**** NOTE TO SPECIFIER ** Delete insulation, finish and glazing options not required.**

- 2) Insulation: No. Model 3290 with non-insulated aluminum rails
- 3) Insulation: Yes. Model 3291 with polystyrene insulated aluminum rails.
- 4) Finish: Clear Anodized.
- 5) Finish: White Powder Coat.
- 6) Finish: Black Powder Coat.
- 7) Finish: RAL Powder Coat No. _____.
- 8) Glazing: 1/8 inch (3 mm) plain DSB.
- 9) Glazing: 1/8 inch (3 mm) tinted.
- 10) Glazing: 1/8 inch (3 mm) obscure.
- 11) Glazing: 1/8 inch (3 mm) polycarbonate.
- 12) Glazing: 1/8 inch (3 mm) tempered.
- 13) Glazing: 1/8 inch (3 mm) tempered tinted.
- 14) Glazing: 1/4 inch (6 mm) tempered.
- 15) Glazing: 1/4 inch (6 mm) tempered tinted.
- 16) Glazing: 1/4 inch (6 mm) tempered frosted.
- 17) Glazing: 1/4 inch (6 mm) clear laminated.
- 18) Glazing: 1/4 inch (6 mm) white laminated.
- 19) Glazing: 1/2 inch (13 mm) plain DSB insulated.
- 20) Glazing: 1/2 inch (13 mm) tinted insulated.
- 21) Glazing: 1/2 inch (13 mm) frosted insulated.
- 22) Glazing: 1/2 inch (13 mm) obscure insulated.
- 23) Glazing: 1/2 inch (13 mm) Low E insulated.
- 24) Glazing: 1/2 inch (13 mm) tempered insulated.
- 25) Glazing: 1/2 inch (13 mm) tempered Low E insulated.
- 26) Glazing: 1/2 inch (13 mm) tempered tinted insulated.
- 27) Glazing: 1/2 inch (13 mm) tempered frosted insulated.
- 28) Glazing: 1/2 inch (13 mm) tempered obscure insulated.
- 29) Glazing: 3/8 inch (10 mm) triple wall poly insulated.

**** NOTE TO SPECIFIER ** Delete Window Lite Pattern options not required, or delete all..**

- aa. Window Lite Pattern: Full width of section. Section(s) ___ from ground.
- bb. Window Lite Pattern: Left side looking out, ___ wide by ___ high. Section ___ from ground.
- cc. Window Lite Pattern: Right side looking out, ___ wide by ___ high. Section ___ from ground.
- dd. Window Lite Pattern: Per attached drawing.

**** NOTE TO SPECIFIER ** Delete locking options not required.**

- ee. Locking: No Lock.
- ff. Locking: One Inside slide lock.
- gg. Locking: Two Inside slide locks.
- hh. Locking: Outside center lock.
- ii. Locking: Double lock bar.

**** NOTE TO SPECIFIER ** Delete wather seal option not required.**

- jj. Weather Seal: U-shaped bottom astragal with aluminum retainer (standard).
- kk. Weather Seal: Top Seal
- ll. Weather Seal: Header and Jamb. Flexible one-piece vinyl extrusion.

**** NOTE TO SPECIFIER ** Delete operation options not required.**

- mm. Operation: Manual.
- nn. Operation: Chain hoist. Not available for standard lift or low headroom track options.
- oo. Operation: Electric.

**** NOTE TO SPECIFIER ** Delete jamb material options not required.**

- pp. Jamb Material: Wood.

qq. Jamb Material: Steel – Sections will be 2 inches (51 mm) wider than opening.

**** NOTE TO SPECIFIER ** Delete track type options not required.**

- rr. Track Type: Standard Lift, 15 inches (381 mm) radius standard. Consult factory for openings more than 300 square feet (27.9 square meters).
- ss. Track Type: Vertical Lift. Consult factory for doors over 16 ft (4.877 mm) or openings more than 300 square feet (27.9 square meters).
- tt. Track Type: High Lift. Consult factory for more than 120 inches (3.05 m) or openings more than 300 square feet (27.9 square meters). Specify Lift Amount: ___ inches (___ mm).
- uu. Track Type: Follow Roof Line / Incline. Available in pitch increments of 0.5 from 0.5/12 to 12/12. Consult factory if less than 15 inches (381 mm) of headroom, openings more than 300 square feet (27.9 square meters) or pitch greater than 6/12.
- vv. Track Type: Low Head Room.

**** NOTE TO SPECIFIER ** Delete front mount options not required.**

- 1) Front Mount: 12 inches (305 mm) Radius, 2 inches Track Only.
- 2) Front Mount: 15 inches (381 mm) Radius.
- 3) Rear Mount: 12 inches (305 mm) Radius, 2 inches Track Only.
- 4) Rear Mount: 15 inches (381 mm) Radius.

**** NOTE TO SPECIFIER ** Delete track appearance options not required. Galvanized is standard.**

- ww. Track Appearance: Galvanized.
- xx. Track Appearance: White Powder Coat.
- yy. Track Appearance: RAL Powder Coat No. _____.
- zz. Track Size: Track mounting and size is based on door size and weight. Lower track is adjustable for weathertight fit. Optional to upgrade to clip angle or continuous when not standard. Track will be minimum 16-gauge, 0.055 inch (1.39mm) galvanized steel. Gauge will increase based on design requirements. 2-inch (51 mm) track for 2 inch (51 mm) rollers or 3 inch (76 mm) track with 3 inch (76 mm) rollers.
- aaa. Roller Assemblies: Galvanized steel adjustable roller holders with floating hardened steel bearing rollers, located at top and bottom of each side of each section. Size and type to be determined by the manufacturer based on door size and weight.
- bbb. Hinges: 14-gauge, 0.070 inch (1.77 mm) galvanized steel standard to 24 ft 2 inches (7.37m). 11-gauge, 0.114 inch (2.89 mm) galvanized steel standard if larger.
- ccc. Spring Counterbalance: Helically-wound, oil-tempered torsion springs mounted on cross-header shaft supported by galvanized steel ball bearing end plates and center carrier brackets as required. Springs to be individually calibrated to each door. Spring shafts are hollow or solid based on door size and weight. Counterbalance transferred to doors via aircraft quality braided steel lift cables.
- ddd. Spring Cycle Life: 10,000 cycles standard. Consult factory for extended life cycles up to 100,000 cycles. There are limitations based on door size and weight.

2.3 COMPONENTS

**** NOTE TO SPECIFIER ** Delete the following paragraph if doors are manually operated.**

- A. Electric Operator:
 - 1. Externally mounted on drive side of door.

**** NOTE TO SPECIFIER ** Delete power supply options not required.**

2. Power Supply: 115 Volts AC single phase.
3. Power Supply: 208/230 Volts AC single or three phase.
4. Power Supply: 460 Volts AC three phase.
5. Manually operable in case of power failure.

**** NOTE TO SPECIFIER ** Delete control station power option and control station options not required.**

6. Control Station Power: 24 VDC.
7. Control Station Power: 115 VAC.
8. Control Station: Keyed Switch.
9. Control Station: Two button (Open / Close) station.
10. Control Station: Three button (Open / Stop / Close) station.

**** NOTE TO SPECIFIER ** Delete paragraph if no safety device is specified for electrically controlled units or delete safety device options not required.**

- B. Safety Reversing Device:
 1. Safety Device: Photoelectric sensor; detect obstruction and reverse door without requiring door to contact obstruction.
 2. Safety Device: Electric pneumatic edge; detect obstruction and reverse door upon contact with pneumatic hose.
 3. Safety Device: Electric edge; detect obstruction and reverse door upon contact with electric strips in vinyl housing.
 4. Safety Device: Electric edge; fail-safe, self-monitoring.

- C. Pass Door: Entry door incorporated into the overhead door allowing for entry and exit without opening the door. Placement of door and opening direction based on inside looking out orientation. All doors open to the outside. Not ADA compliant.
 1. Overhead door requirements:
 - a. Minimum Width: 5 ft 6 inches (1.68 m)
 - b. Maximum Width: 14 ft 2 inches (4.32 m)
 - c. Minimum Height: 7 ft 0 inches (2.13 m)
 - d. Maximum Height: 18 ft 0 inches (5.49 m)
 - e. Minimum Headroom: 15 inches (0.38 m)
 2. Door Width: 32 inches (0.81 m).
 3. Door Height: Based on stacking arrangement required for overhead door. Minimum height is 68 inches (1.73 m) and maximum height is 77 inches (1.96 m).
 4. Door Placement. For side placement, door will be approximately 8 inches (0.20 m) from end of section.
 - a. Left
 - b. Middle
 - c. Right
 5. Hinge Side:
 - a. Left
 - b. Right
 6. Door Handle:
 - a. Door Latch
 - b. Push Bar

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until work areas have been properly prepared.
- B. If preparation is the responsibility of another installer, notify Architect of

unsatisfactory conditions before proceeding.

3.2 INSTALLATION

- A. Install door assembly in accordance with manufacturer's instructions.
- B. Anchor to adjacent construction without distortion or stress.
- C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

**** NOTE TO SPECIFIER ** Include the following paragraph if head and jamb weatherstripping is specified.**

- E. Position head and jamb weatherstripping to contact door sections when closed; secure in position.

**** NOTE TO SPECIFIER ** Include the following paragraph if electrically operated doors are specified.**

- F. Make wiring connections between power supply and operator and between operator and controls.

3.3 ADJUSTING

- A. Adjust to operate smoothly throughout full operating range.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION